

CERN Receives First US-built Component for Large Hadron Collider

In a milestone for global science collaboration, CERN* took delivery today of the first US-built contribution to what will be the world's highest-energy particle accelerator. The superconducting magnet, built at the US Brookhaven National Laboratory will become a key component of the Large Hadron Collider (LHC). It is the first of several advanced accelerator elements the US will provide for the LHC under the terms of a 1998 agreement between CERN and the US Department of Energy (DOE) and National Science Foundation (NSF).

"The arrival of this magnet from Brookhaven marks a new era in international collaboration in particle physics," said CERN Director General Luciano Maiani. "The LHC is the first truly global collaboration in particle physics, and this magnet joins a steadily growing stream of LHC components arriving from around the world - a tangible demonstration of people of all kinds working together towards a common goal."

To reach the highest energy ever produced by an accelerator, the LHC will use more than 6,000 superconducting magnets, most of which are being built by CERN's industrial partners in Europe. As part of the total \$531-million US contribution to the LHC, Brookhaven agreed to develop and manufacture the LHC's interaction-region dipole magnets, which will guide the LHC's two counter-rotating beams of protons into collision.

"I congratulate the Brookhaven team on this milestone for international collaboration in scientific research," said Dr. Raymond L. Orbach, Director of the Department of Energy's Office of Science, which funds the US LHC magnet contributions. "It is tangible evidence of the successful fulfillment of the commitment we have made to provide advanced US magnet technology and accelerator expertise for the next step in worldwide particle physics research at the energy frontier. And it is exciting to be a party to the future accomplishments of the LHC."

The 25-ton Brookhaven magnet, the first of 20 that the laboratory will ultimately provide, took nine months to construct, with more than 100 scientists, engineers and technicians contributing to its successful completion. Brookhaven's Superconducting Magnet Division is now building the remaining 19 magnets, which will be shipped to CERN later this year.

In addition to Brookhaven, other US partners on the project include the Fermi National Accelerator Laboratory (Fermilab), which is constructing 18 quadrupole magnets, and Lawrence Berkeley National Laboratory, which is working on superconducting cable and utility boxes for the magnet assemblies.

"Our colleagues at Brookhaven have done a splendid job, producing the first US-built superconducting magnet for the LHC project in time and according to specification," said LHC project leader Lyn Evans. "This will soon be followed by further deliveries from Brookhaven as well as from Fermilab and Lawrence Berkeley National Laboratory, all actively participating in the LHC design and construction. This constitutes a major step forward in international collaboration in the construction and exploitation of large facilities for particle physics research."

Fermilab physicist Jim Strait, Project Manager for the US LHC accelerator effort, said the collaborative nature of the project is integral to its success. "The delivery of the first US superconducting magnet to CERN for the LHC is a significant accomplishment by Brookhaven, and a major milestone in international collaboration on high-energy accelerators," said Strait. "The US collaboration with CERN is proving very productive for both sides, and I hope it will continue in the future for the benefit of world-wide particle physics."

Scheduled to start in April 2007, the LHC will probe deeper into matter than ever before to explore a new energy region and search for new phenomena. The 27-kilometre rings of the LHC will circulate two counter-rotating beams of protons at nearly the speed of light (300,000 kilometres or 186,000 miles per second) while maintaining the protons precisely at the centre of the beam pipe containing them.

Brookhaven National Laboratory is a national laboratory operated by Brookhaven Science Associates for the US Department of Energy's Office of Science.